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Indian Standard
SPECIFICATION FOR ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

Third Reprint FEBRUARY 2008
(Incorporating Amendment Nos 1 to 3 and Including Amendment Nos 4 & 5)

UDC 632.95 Endosulfan

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 5 *January* 1968

Indian Standard

SPECIFICATION FOR ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

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AMENDMENT NO. 4 OCTOBER 1988
TO
IS : 4324 - 1967 SPECIFICATION FOR ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

(*Page* 4, *Table* 1) — Add the following note at the end of the Table:

'NOTE — The material shall not be subjected to accelerated storage treatment if it has crossed half of its shelf life as ascertained from its date of manufacture and date of expiry declared on the container.'

(AFCDC 6)

Printed at Power Printers, New Delhi

AMENDMENT NO. 5 MAY 1994
TO
IS 4324 : 1967 SPECIFICATION FOR ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

(*Page* 4 *Table* 1):

a) Sl No. (ii), col 2 } — Delete the words 'after accelerated storage'.
b) Sl No. (iii), col 2 }

(*Page* 5, *clause* **4.1**) — Substitute the following for the existing:

'When freshly manufactured material in bulk quantity is offered for inspection, representative samples of the material shall be drawn and tested as prescribed in IS 10627 : 1983 within 90 days of its manufacture. When the material is offered for inspection after 90 days of its manufacture, sampling shall be done as prescribed in IS 10627 : 1983. However, the criteria for conformity of the material when tested, shall be the limits of tolerances, as applicable over the declared nominal value and given under clause **2.2.1** of the standard.'

(FAD 1)

Printed at Power Printers, New Delhi

Indian Standard

SPECIFICATION FOR ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 October 1967, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 Endosulfan water dispersible powder concentrates containing varying percentages of endosulfan, technical, are largely used in the control of pests of agricultural importance.

0.3 Taking into consideration the views of producers, consumers, testing authorities and technologists, the Sectional Committee responsible for the preparation of this standard felt that it should be related to the manufacturing and trade practices followed in the country in this field.

0.4 This standard is one of a series of Indian Standards on pesticides and their formulations.

0.5 This standard contains clauses 3.1, E-2.3 and E-3.4 which call for an agreement between the purchaser and the vendor.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of test for endosulfan water dispersible powder concentrates containing varying percentages of endosulfan, technical.

NOTE — Endosulfan is the accepted common name for this pesticide by the International Organization for Standardization, ISO.

---

*Rules for rounding off numerical values (*revised*).

2. REQUIREMENTS

2.1 Description — The material shall be in the form of powder and shall wet readily on mixing with water providing a suspension suitable for use as a spray.

2.1.1 Endosulfan, technical, employed in the manufacture of the material, shall conform to IS : 4344-1967*.

2.2 The material shall comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

SL No. (1)	CHARACTERISTIC (2)	REQUIREMENT (3)	METHOD OF TEST (REF TO APPENDIX) (4)
i)	Endosulfan content, percent by weight	Nominal value as declared on the container with appropriate tolerance (*see* 2.2.1)	A
ii)	Sieving requirement, material passing through 75-micron IS Sieve*, after accelerated storage, percent by weight, *Min*	97	B
iii)	Suspensibility after accelerated storage, percent by weight, *Min*	50	C
iv)	Acidity (as HCL), percent by weight, *Max* *OR*	0·25	D
	Alkalinity (as Na_2CO_3), percent by weight, *Max*	1·0	

**See* IS : 460-1962 ' Specification for test sieves (*revised*) '. BS Sieve 200, ASTM Sieve 200 and Tyler Sieve 200 have their apertures within the limits specified for the above IS Test Sieve and, therefore, may be used in place of 75-micron IS Sieve.

2.2.1 *Endosulfan Content* — When determined by the method prescribed in Appendix A, the observed endosulfan content, percent by *mass*, of any of the samples shall not differ from the declared nominal value by more than the tolerance limits indicated below:

Nominal Value Percent	*Tolerance Limit*	
Up to 9	+ 10 − 5	percent of the nominal value
10 and below 50	± 5	
50 and above	+ 5 − 3	

---

*Specification for endosulfan, technical.

2.2.1.1 The actual value of endosulfan content shall be calculated to the second decimal place and then rounded off to the first decimal place before applying the tolerances as stipulated in **2.2.1**.

3. PACKING AND MARKING

3.1 Packing — The material shall be packed in clean and dry containers made of tinplate, fibreboard or cardboard, with polyethylene liner as agreed to between the purchaser and the vendor.

3.2 Marking — The containers shall be securely closed and shall bear legibly and indelibly the following information:

a) Name of the material;

b) Name of the manufacturer;

c) Date of manufacture;

d) Batch number;

e) Net weight of the contents;

f) Nominal content of endosulfan, technical, percent by weight; and

g) The minimum cautionary notice worded as under:

'KEEP WELL AWAY FROM FOODSTUFFS, EMPTY FOODSTUFF CONTAINERS AND ANIMAL FEEDS. DESTROY EMPTY CONTAINERS.'

3.2.1 The product may also be marked with Standard Mark.

3.2.2 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufactures or producers may be obtained from the Bureau of Indian Standards.

4. SAMPLING

4.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Appendix E.

5. TESTS

5.1 Tests shall be carried out as prescribed in the appropriate appendices given in col 4 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1960*) shall be employed in tests.

NOTE — ' Pure chamicals ' shall mean chemicals that do not contain impurities which affect the results of anylysis.

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF ENDOSULFAN, TECHNICAL CONTENT

A-1. PRINCIPLE OF THE METHOD

A-1.1 The principle in determination of endosulfan is based on hydrolysis of endosulfan with methanolic sodium hydroxide and estimating as sodium sulphite (Na_2SO_3) formed iodimetrically.

A-2. REAGENTS

A-2.1 Methanol

A-2.2 Sodium Hydroxide — pellets.

A-2.3 Phenolphthalein Indicator Solution — one percent (*w/v*) in rectified spirit (conforming to IS : 323-1959†).

A-2.4 Standard Sulphuric Acid — 5 N.

A-2.5 Standard Iodine Solution — 0·1 N.

A-2.6 Standard Sodium Thiosulphate Solution — 0·1 N.

A-2.7 Starch Solution — 0·2 percent, freshly prepared.

A-3. PROCEDURE

A-3.1 Weigh accurately a quantity of the material containing about 0·5 g of endosulfan, technical, and transfer it to a 250-ml flask. Add 100 ml of methanol by a pipette. Introduce about 1·5 g of sodium hydroxide pellets (about 15 pellets). Connect the flask to a reflux

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*Specification for water, distilled quality (*revised*).

†Specification for rectified spirit (*revised*).

condenser and boil the contents at least for two hours. Shake the flask occasionally. Wash down the condenser with 20 ml of methanol and 50 ml of distilled water. Add one drop of the phenolphthalein indicator solution. Neutralize with standard sulphuric acid. Add a few drops of dilute sodium hydroxide solution to restore the indicator colour and to prevent any loss of sulphur dioxide.

A-3.2 For accurate determination of the sulphite, it is essential to add the sodium sulphite to an excess of acidified standard iodine solution and back titrate the excess of iodine with standard sodium thiosulphate solution.

A-3.3 Take 40 ml of standard iodine solution in a 500-ml glass stoppered iodine flask from a burette. Add 1 ml of the standard sulphuric acid and shake it slowly. While agitating, add the sulphite solution. Rinse the flask well with small portions of distilled water until all the sulphite has been transferred. (The washing procedure should be continued until there is insufficient sulphite in the flask to bleach a small drop of iodine.) The final volume in the iodine flask should be between 225 to 250 ml.

A-3.4 Back titrate the excess iodine with the standard sodium thiosulphate solution using starch solution as indicator and titrate until the blue colour diappears.

A-3.5 Carry out a blank determination by titrating 40 ml of the standard iodine solution with 175 ml of water acidified by 1 ml of standard sulphuric acid (5 N) with standard sodium thiosulphate solution.

A-3.6 The difference in the volumes of sodium thiosulphate solution in the titrations in **A-3.4** and **A-3.5** indicates the iodine equivalent consumed by endosulfan.

A-4. CALCULATION

A-4.1 Endosulfan content, percent by weight $= \dfrac{V \times 2{\cdot}035}{W}$

where

V = volume in ml of 0·1 N iodine solution consumed by endosulfan (**A-3.6**), and

W = weight in g of the material taken for the test (**A-3.1**).

APPENDIX B

[*Table* 1, *Item* (ii)]

TEST FOR SIEVING REQUIREMENT AFTER ACCELERATED STORAGE

B-1. APPARATUS

B-1.1 Beaker — of capacity 250 ml and internal diameter 6·0 to 6·5 cm.

B-1.2 Pressure Assembly — a piston or disc, loosely fitting the beaker and so formed or weighed as to exert an even pressure of 25 g/cm^2.

B-1.3 Test Sieve — 75-micron IS Sieve, prepared for the test by removing any film, grease or other water-repellent material and then by drying.

B-1.4 Rubber Hose — of an internal diameter of about 10 mm.

B-2. PROCEDURE

B-2.1 Accelerated Storage — Weigh 20·0 ± 0·5 g of the material and gently place it in the beaker. Gently level the surface of the material in the beaker with the help of a paper strip, camel hair brush or a feather. Place the pressure assembly over the surface of the material in the beaker and then place the beaker with the pressure assembly in an oven at 53° to 55°C for 24 hours. Take out the beaker from the oven, remove the pressure assembly and allow the material in the beaker to come down naturally to room temperature in a closed container for a period of 3 hours.

B-2.2 Sieving — At the completion of 3 hours of cooling, weigh accurately 10·0 ± 0·5 g of the treated material (B-2.1) into a wide-mouth bottle (provided with a cork or rubber stopper) containing 100 ml of tap water. Stopper the bottle and shake it to mix the contents and make a uniform slurry. Transfer the slurry to the test sieve and wash any residue in the bottle on to the sieve using small quantities of tap water. Wash the slurry on the sieve with an oscillating, moderately vigorous spray of tap water issuing out of the rubber hose at the rate of 4 to 5 litres per minute. Continue washing for 10 minutes or until no more solid particles of the material pass through the sieve. Transfer the residue retained on the sieve to a tared Gooch crucible, dry to constant weight, in the oven at a temperature not exceeding 55°C, cool and weigh. Find the weight of the dry residue.

B-3. CALCULATION

B-3.1 Material passing through 75-micron IS Sieve, percent by weight $= 100\left(1 - \frac{w}{W}\right)$

where

w = weight of the dry residue, and

W = weight of the treated material taken for preparing the slurry.

APPENDIX C

[*Table* 1, *Item* (iii)]

DETERMINATION OF SUSPENSIBILITY AFTER ACCELERATED STORAGE

C-1. APPARATUS

C-1.1 Beaker — of capacity 250 ml and internal diameter 6·0 to 6·5 cm.

C-1.2 Pressure Assembly — a piston or disc, loosely fitting the beaker and so formed or weighed as to exert an even pressure of 25 g/cm^2.

C-1.3 Graduated Cylinder — of capacity 250 ml, with a ground glass stopper. The distance between 0 and 250 ml marks shall be 21·0 ± 0·5 cm.

C-1.4 Glass Tube — about 40 cm long, of an internal diameter of about 5 mm, drawn at one end to an opening of 2 to 3 mm diameter, with the other end connected to a vacuum pump.

C-2. REAGENT

C-2.1 Standard Hard Water — Dissolve 2·740 0 g of calcium carbonate and 0·276 0 g of magnesium oxide in a minimum of dilute hydrochloric acid (2 N). Expel the excess acid by evaporation to dryness on a water-bath and dissolve the residue in a small quantity of water. Transfer this solution quantitatively to a 100-ml volumetric flask, make up the volume with water and mix. Pipette 10 ml of this solution into a one-litre volumetric flask, make up the volume with water and mix.

NOTE — Standard hard water is defined as ' water ', which provides a hardness of 342 parts per million, calculated as calcium carbonate and has the following composition:

Calcium chloride, anhydrous	0·304 0 g
Magnesium chloride hexahydrate	0·139 0 g
Distilled water	to make 1 000 ml

C-3. PROCEDURE

C-3.1 Accelerated Storage — Weigh accurately 20·0 ± 0·5 g of the material and gently place it in the beaker. Gently level the surface of the material in the beaker with the help of a paper strip, a camel hair brush or a feather. Place the pressure assembly over the surface of the material in the beaker and then place the beaker with the pressure assembly in an oven at 53° to 55°C for 24 hours. Take out the beaker from the oven, remove the pressure assembly and allow the material in the beaker to come down naturally to room temperature in a closed container for a period of 3 hours, taking care to avoid unnecessary exposure of the sample to atmospheric humidity.

C-3.2 Suspensibility Test — At the completion of 3 hours of cooling, weigh accurately into a 100-ml beaker, a quantity of the treated material which could form 250 ml of a suspension of 0·25 percent of endosulfan. Add to it 30 ml of standard hard water at 30° ± 1°C, work the mass into a uniform slurry and allow it to stand for 15 minutes at 30° ± 1°C. Transfer the slurry to the graduated cylinder. Wash any residue in the beaker with small quantities of standard hard water at 30° ± 1°C. Transfer the washings to the cylinder. Fill the cylinder to the 250-ml mark with standard hard water at 30° ± 1°C. Close the cylinder with the stopper and invert it sharply through 30 complete cycles within one minute, thermally insulating the cylinder from the hands to maintain the temperature of the contents at 30° ± 1°C during the operation. Allow the cylinder to stand at rest for 30 minutes in a water-bath maintained at 30° ± 1°C. (The bench on which the cylinder is placed should be protected from vibrations.) At the end of the settling period (30 minutes), dip the nozzle of the glass tube (C-1.4) into the supernatant liquid contained in the cylinder and withdraw nine-tenths (225 ml) of the suspension, within 10 to 15 seconds, using the vacuum pump. During its withdrawal the suspension should be disturbed as little as possible, which could be achieved by maintaining the nozzle of the glass tube just below the sinking top level of the suspension.

C-3.3 Determine the endosulfan content of the sediment and the suspension remaining in the graduated cylinder by the methods prescribed in Appendix A.

NOTE — Should excessive flocculation occur during the test accompanied by the appearance of transparent liquid, the material shall be deemed unsatisfactory.

C-4. CALCULATION

C-4.1 Weight of endosulfan in suspension, expressed as percentage of the endosulfan content in the treated material taken for the test $= \dfrac{1\,000\,(W - w)}{9\,W}$

where

W = weight in g of endosulfan present in the treated material taken for the preparation of the suspension, and

w = weight in g of endosulfan found in the sediment and the suspension remaining in the graduated cylinder (C-3.3).

C-5. INTERPRETATION

C-5.1 If, by carrying out one test on a sample, the test result shows that a minimum of 50 percent by weight of endosulfan is in suspension 30 minutes after agitating, the sample should be treated as having met the requirement without further testing.

C-5.2 If, by carrying out one test on a sample, the test result shows that the quantity of endosulfan in suspension 30 minutes after agitating varies between 45 and 50 percent by weight, the test should be repeated *three times* and if the average of the three test results is 50 percent or more, the sample should be treated as having met the requirement; but if the average is less than 50 percent, the sample should be treated as having failed to meet the requirement.

C-5.3 If, by carrying out one test on a sample, the test result shows that the quantity of endosulfan in suspension 30 minutes after agitating is less than 45 percent by weight, the sample should be treated as having failed to meet the requirement.

APPENDIX D

[*Table* 1, *Item* (iv)]

DETERMINATION OF ACIDITY OR ALKALINITY

D-1. QUALITATIVE TEST

D-1.1 Procedure — Take about 0·5 ml of the material in a test tube and mix it with about one millilitre of water. Test the mixture for acidity alkalinity with a litmus paper. Determine the accidity or the alkalinity by the following method.

D-2. DETERMINATION OF ACIDITY

D-2.1 Reagents — The following reagents are required.

D-2.1.1 *Methyl Red Indicator Solution* — aqueous, one percent (*w/v*).

D-2.1.2 *Standard Sodium Hydroxide Solution* — approximately 0·02 N.

D-2.2 Procedure

D-2.2.1 Weigh accurately about 10 g of the material into a dry conical flask, and dilute it with 100 ml of water. Titrate the contents of the flask immediately with standard sodium hydroxide solution using methyl red as indicator.

D-2.2.2 Carry out a blank determination on 100 ml of water.

D-2.3 Calculation

$$\text{Acidity (as } H_2SO_4 \text{), percent by weight} = \frac{4{\cdot}9\,(V - v)\,N}{W}$$

where

V = volume in ml of standard sodium hydroxide solution required for the test with the material,

v = volume in ml of standard sodium hydroxide solution required for the blank determination,

N = normality of standard sodium hydroxide solution, and

W = weight in g of the material taken for the test.

D-2.3.1 In case the blank shows alkaline reaction, neutralize with standard hydrochloric acid (approx 0·02 N), and calculate acidity as follows:

$$\text{Acidity (as } H_2SO_4 \text{), percent by weight} = \frac{4{\cdot}9\,(VN_1 + vN_2)}{W}$$

where

V = volume in ml of standard solution hydroxide solution required for the test with the material,

N_1 = normality of standard hydroxide solution,

v = volume in ml of standard hydrochloric acid required for the blank determination,

N_2 = normality of standard hydrochloric acid, and

W = weight in g of the material taken for the test.

D-3. DETERMINATION OF ALKALINITY

D-3.1 Reagent — The following reagents are required.

D-3.1.1 *Phenolphthalein Indicator Solution* — one percent (*w/v*), in rectified spirit (conforming to IS : 323-1959*).

D.3.1.2 *Standard Hydrochloric Acid* — approximately 0·02 N.

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*Specification for rectified spirit (*revised*).

D-3.2 Procedure

D-3.2.1 Weigh accurately about 10 g of the material into dry conical flask and dilute it with 100 ml of water. Titrate the contents of the flask immediately with standard hydrochloric acid using phenolphthalein as indicator.

D-3.2.2 Carry out a blank determination on 100 ml of water.

D-3.3 Calculation

$$\text{Alkalinity (as NaOH), percent by weight} = \frac{4{\cdot}0\,(V - v)\,N}{W}$$

where

V = volume in ml of standard hydrochloric acid required for the test with the material,
v = volume in ml of standard hydrochloric acid required for the blank determination,
N = normality of standard hydrochloric acid, and
W = weight in g of the material taken for the test.

D-3.3.1 In case the blank shows acid reaction, neutralize with standard sodium hydroxide solution (approx 0·02 N), and calculate alkalinity as follows:

$$\text{Alkalinity (as NaOH), percent by weight} = \frac{4{\cdot}0\,(VN_1 + vN_2)}{W}$$

where

V = volume in ml of standard hydrochloric acid required for the test with the material,
N_1 = normality of standard hydrochloric acid,
v = normality in ml of standard sodium hydroxide solution required for the blank determination,
N_2 = normality of standard sodium hydroxide solution, and
W = weight in g of the material taken for the test.

APPENDIX E

(*Clause* 4.1)

SAMPLING OF ENDOSULFAN WATER DISPERSIBLE POWDER CONCENTRATES

E-1. GENERAL PRECAUTIONS

E-1.0 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

E-1.1 Samples shall not be taken in an exposed place.

E-1.2 The sampling instrument shall be clean and dry when used.

E-1.3 Proper precautions shall be taken while drawing samples since the material is toxic.

E-1.4 Precautions shall be taken to protect the sample, the material being sampled, the sampling instruments and the receptacles for samples from adventitious contamination.

E-1.5 To draw a representative sample, the contents of each container selected for sampling shall be mixed as thoroughly as possible by shaking or by any other suitable means so as to bring all portions into uniform distribution.

E-1.6 The samples shall be placed in suitable, clean, dry and air-tight sample receptacles.

E-1.7 The sample receptacles shall be of such a size that they are almost, but not completely, filled by the sample.

E-1.8 Each sample receptacle shall be sealed air-tight after filling and marked with full details of sampling, the date of manufacture, name of the manufacturer and other particulars of the consignment.

E-1.9 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

E-1.10 Samples shall be protected from light.

E-2. SCALE OF SAMPLING

E-2.1 Lot — All the containers in a single consignment of the material drawn from the same batch of manufacture shall constitute a lot. If a consignment is declared or is known to consist of different batches of manufacture, the containers belonging to the same batch shall be grouped together and each such group shall constitute a separate lot.

E-2.1.1 Samples shall be tested separately for each lot for ascertaining the conformity of the material to the requirements of the specification.

E-2.2 The number (n) of containers to be selected from the lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

E-2.3 These containers shall be selected at random from the lot. To ensure the randomness of selection, a random number table as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be used:

> Starting from any container, count all the containers as 1, 2, 3,......, up to r and so on, in one order, where r is equal to the

integral part of N/n, N being the number of containers in the lot and n the number of containers to be selected (Table 2). Every rth container thus counted shall be withdrawn until the requisite number of containers is obtained from the lot to give samples for test.

TABLE 2 NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING

(*Clauses* E-2.2 *and* E-2.3)

No. of Containers in the Lot (N) (1)	No. of Containers to be Selected (n) (2)
3 to 15	3
16 ,, 40	4
41 ,, 65	5
66 ,, 110	7
Over 110	10

E-3. TEST SAMPLES AND REFEREE SAMPLES

E-3.1 Before drawing the test sample thoroughly mix the contents of each container selected by shaking or by any other suitable means. Draw small portions of the material from different parts of each container selected (Table 2). The total quantity of the material drawn from each container shall be not less than 300 g.

E-3.2 Mix thoroughly all portions of the material drawn from the same container. Out of these portions, a small but equal quantity shall be taken for each selected container and shall be well mixed together so as to form a composite sample of not less than 60 g. This composite sample shall be divided into three equal parts, one for the purchaser, another for the supplier and the third for the referee.

E-3.3 The remaining portions of the the material from each container (after a small quantity needed for the formation of the composite sample has been taken out) shall be divided into three equal parts. These parts shall be immediately transferred to thoroughly dried sample receptacles which are then sealed air-tight, and labelled with all the particulars of sampling given under **E-1.8**. The material in each such sealed sample receptacle shall constitute a test sample. These individual samples shall be separated into three identical sets of test samples in such a way that each set has a sample representing each container selected (Table 2). One of these three sets shall be marked for the purchaser, another for the supplier and the third for the referee.

E-3.4 Referee Samples — Referee samples shall consist of the composite sample (E-3.2) and a set of individual test samples (E-3.3) marked for the purpose and shall bear the seals of the purchaser and the supplier. These shall be kept at a place agreed to between the two.

E-4. NUMBER OF TESTS

E-4.1 Tests for description (2.1) and the determination of endosulfan content and suspensibility shall be conducted on each of the individual samples (E-3.3) separately.

E-4.2 Tests for the determination of the remaining characteristics, namely, sieving requirement and acidity shall be conducted on the composite sample (E-3.2).

E-5. CRITERIA FOR CONFORMITY

E-5.1 A lot shall be declared as conforming to all the requirements of this specification, when:

a) each of the sample tested for description satisfies the requirement given in 2.1;

b) each of the test results for endosulfan content and suspensibility satisfies the corresponding requirement specified in Table 1. If, however, one or more of the test results do not satisfy the specified requirements, the conformity of the lot shall be ascertained in accordance with E-5.1.1; and

c) the results of the tests on the composite sample (E-4.2) satisfy the relevant requirements given in Table 1.

E-5.1.1 In case one or more of the test results do not satisfy the requirements for endosulfan content and suspensibility, the following procedure shall be adopted for determining conformity of the material in respect of these characteristics. The mean and the range of the corresponding test results shall be calculated as:

$$\text{Mean } (\bar{X}) = \frac{\text{The sum of the test results}}{\text{Number of test results}}$$

Range (R) = The difference between the highest and the lowest values obtained for the test results.

The appropriate expressions as shown in col 6 of Table 3 shall be calculated. If the values of these expressions satisfy the relevant candition as given in col 6 of Table 3, the lot shall be declared to have satisfied the requirements for endosulfan content and suspensibility.

TABLE 3 CRITERIA FOR CONFORMITY

(*Clause* E-5.1.1)

SL No.	CHARACTERISTICS	TESTS RESULTS 1, 2, 3,......*n*	AVERAGE	RANGE	CRITERION FOR CONFORMITY
(1)	(2)	(3)	(4)	(5)	(6)
i)	Endosulfan content	—	$\bar{X}_1$	R_1	($\bar{X}_1 \pm 0.6\ R_1$) shall lie within the nominal value ±5 percent of the nominal value.
ii)	Suspensibility	—	$\bar{X}_2$	R_2	($\bar{X}_2 - 0.6\ R_2$) $>$ 50

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Printed at Power Printers New Delhi